

09560784-042800

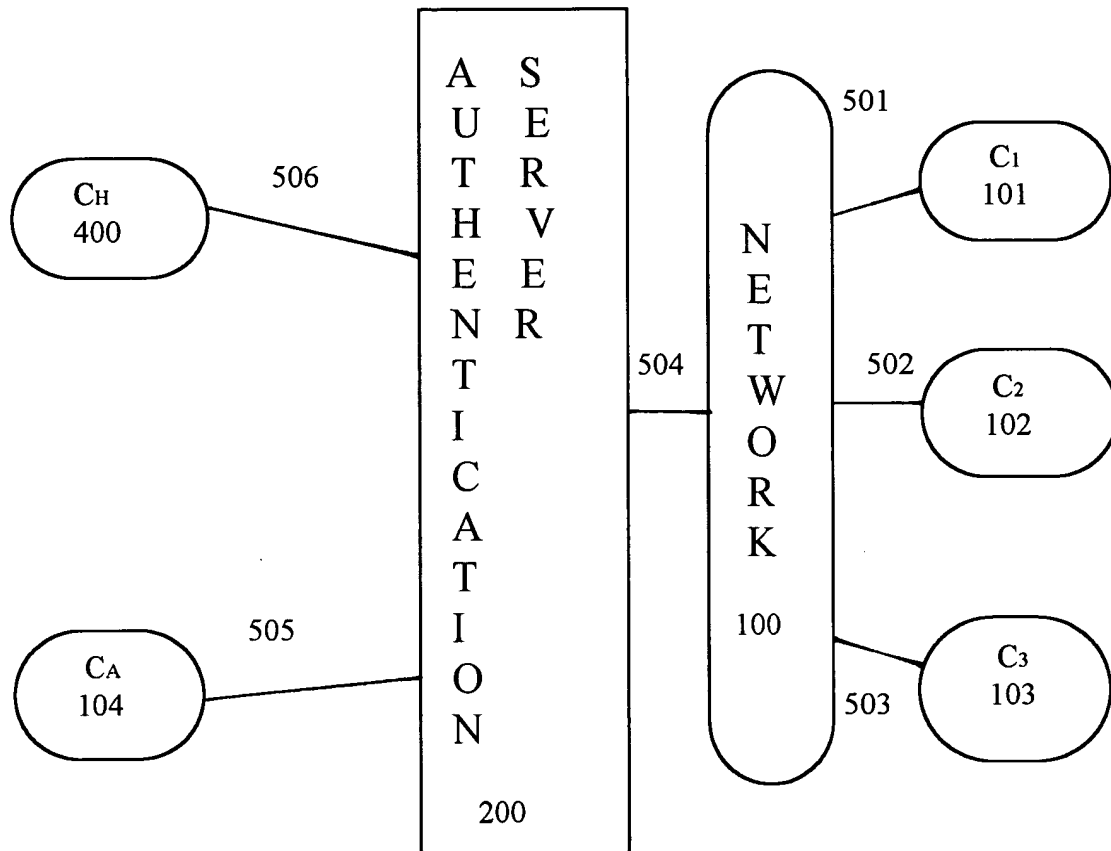


Figure 1

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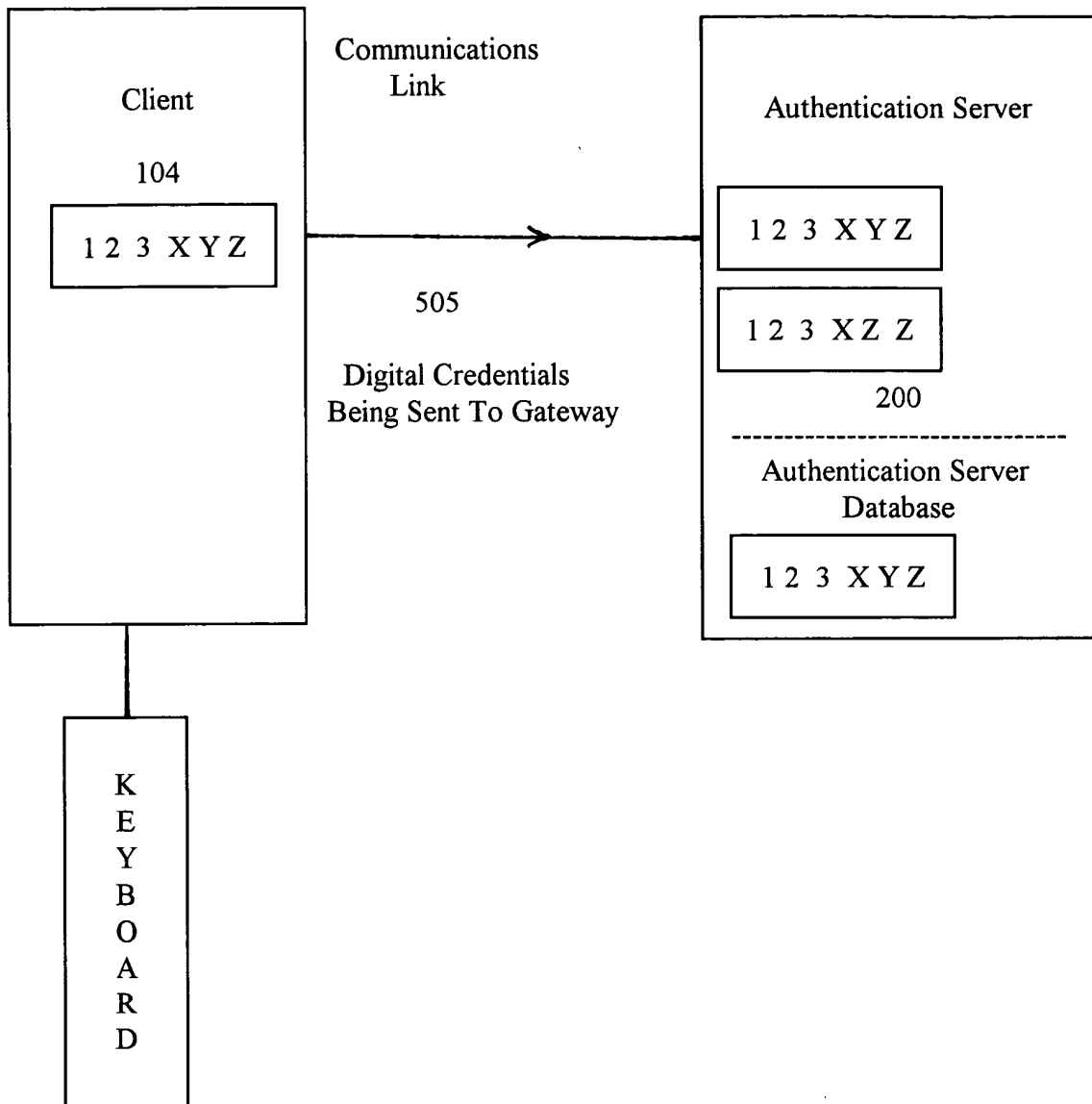


Figure 2

The diagram illustrates the Authentication Server 200 and its interaction with Client 104. Client 104 is shown on the left, containing a box with the text "1 2 3 X Y Z" and a fingerprint icon. An arrow labeled "Communications Link" points from Client 104 to the Authentication Server 200. Below the arrow, the text "505 Digital Credentials Being Sent To Gateway" is displayed. The Authentication Server 200 is shown on the right, containing two boxes with the text "1 2 3 X Y Z" and fingerprint icons, and a box with the text "1 2 3 X X Z" and a fingerprint icon. Below these boxes is a dashed line labeled "Authentication Server Database" containing a box with the text "1 2 3 X Y Z" and a fingerprint icon. At the bottom of the diagram, two vertical boxes are labeled "KEY BOARD" and "SCANNER", connected to the Client 104 box.

Figure 3

Figure 1 is a block diagram of the system architecture. It illustrates the components and data flow between a Client Authentication (CA) unit and an Authentication Server.

Client Authentication (CA) Unit (104):

- Contains a **Radio Transmitter Receiver 105**.
- Has a display showing the identifier **1 2 3 X Y Z**.
- Includes a **CPUA**.
- Has a **Clock** displaying **16 25 03**.
- Is connected to a **KEYBOARD**.
- Antenna **TA (106)** is associated with the CA unit.

Authentication Server (200):

- Contains an **Empirical Data** block with values **t_{A1}**, **t_{A2}**, and **t_{A3}**.
- Has a **Radio Transmitter Receiver**.
- Includes a **CPU₀**.
- Has a display showing the identifier **1 2 3 X Y Z**.
- Includes a **Clock** displaying **16 25 03**.
- Contains an **Authentication Server Database** with:
 - User Credentials for CA 1 2 3 X Y Z**
 - Position of CA**
- Antenna **TAS (206)** is associated with the Authentication Server.

Communications Link (505):

- Connects the CA unit and the Authentication Server.
- Transmits **Empirical Data Being Transmitted To The Authentication Server** from the CA unit to the Authentication Server.

External Elements:

- E1 601**: Spherical Radio Pulse Emitted By CA (700).
- E2 602**: A point or location.
- E3 603**: A point or location.
- Network 100**: Connects the Authentication Server to **Client 101** and **Client 102**.

Figure 4

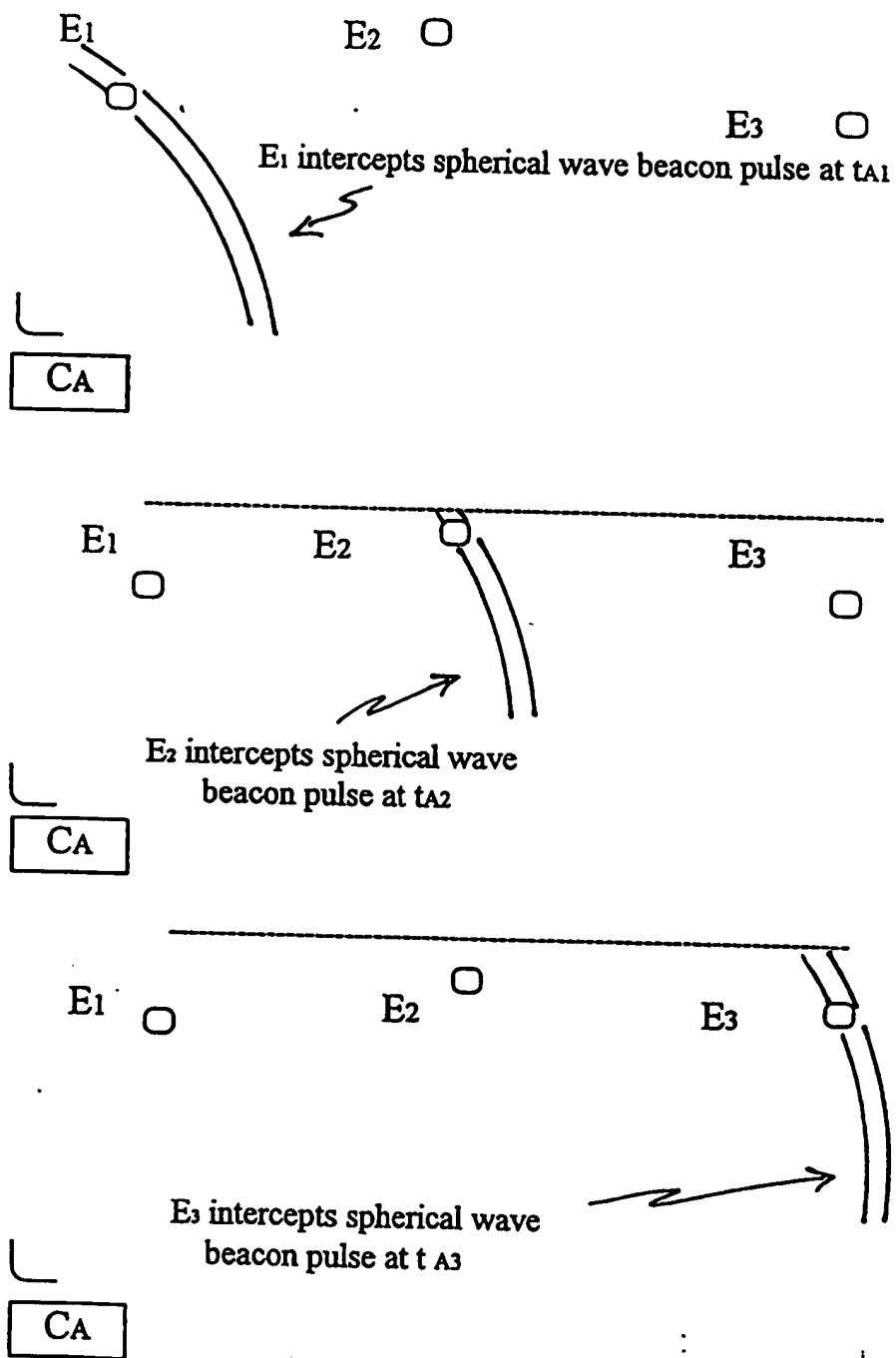


Figure 5

000240-42/00000

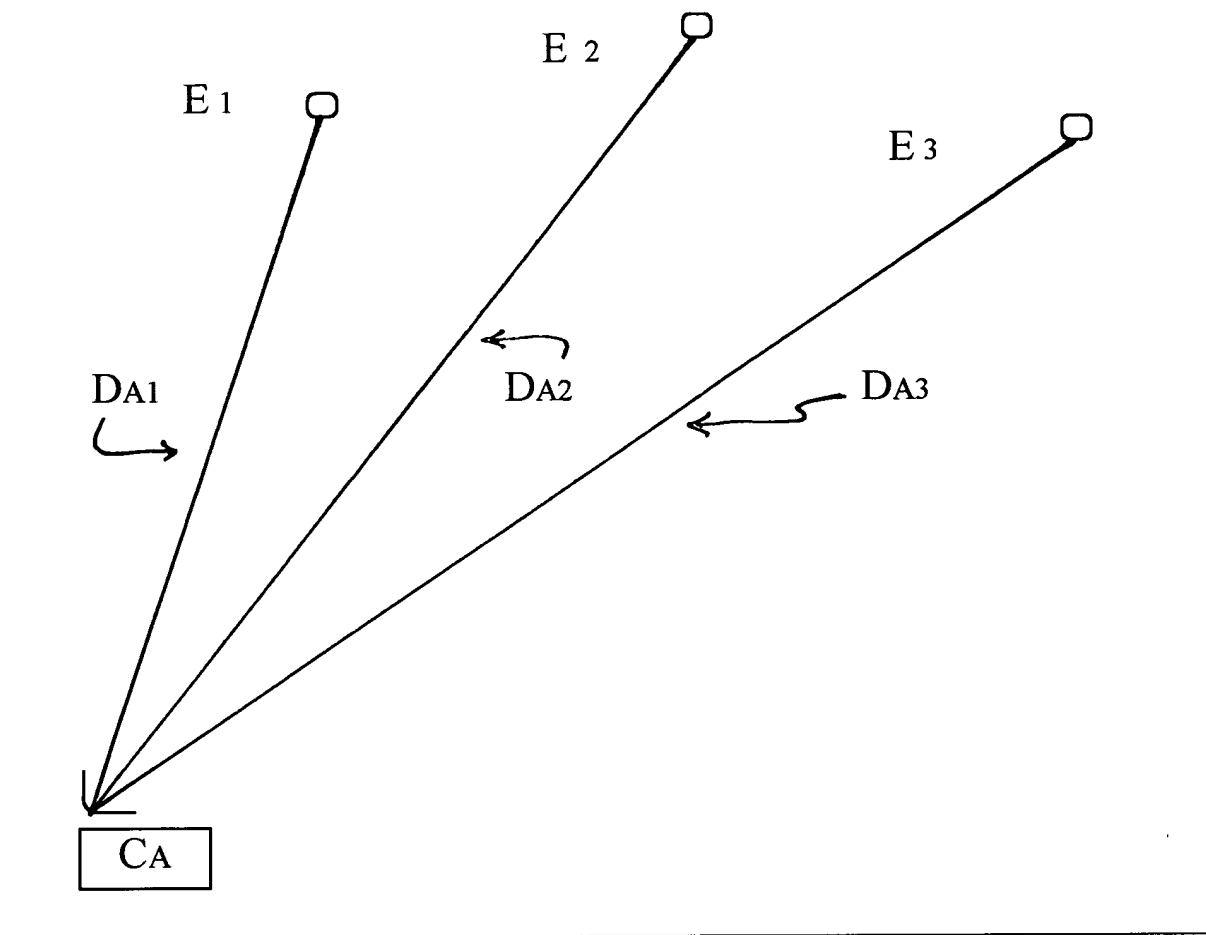


Figure 6

000000-4900000

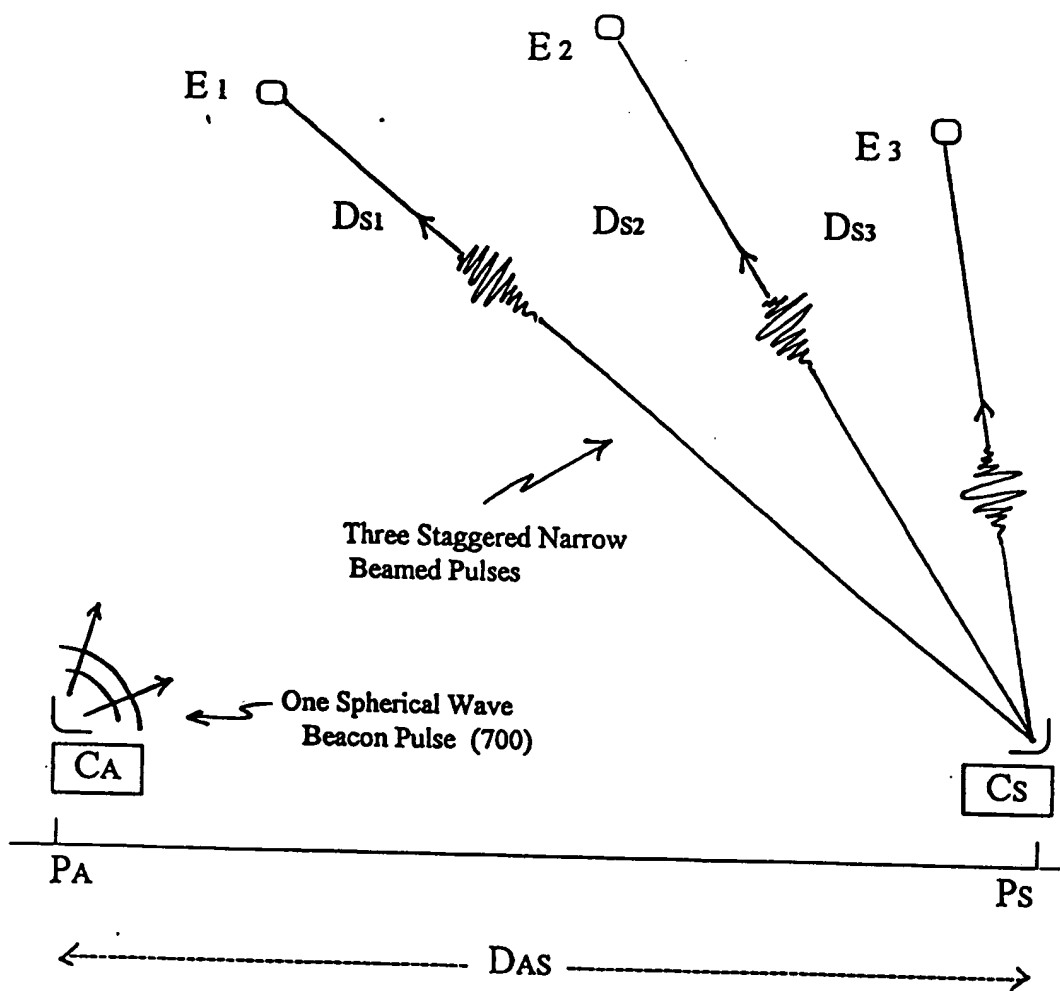


Figure 7

Figure 8

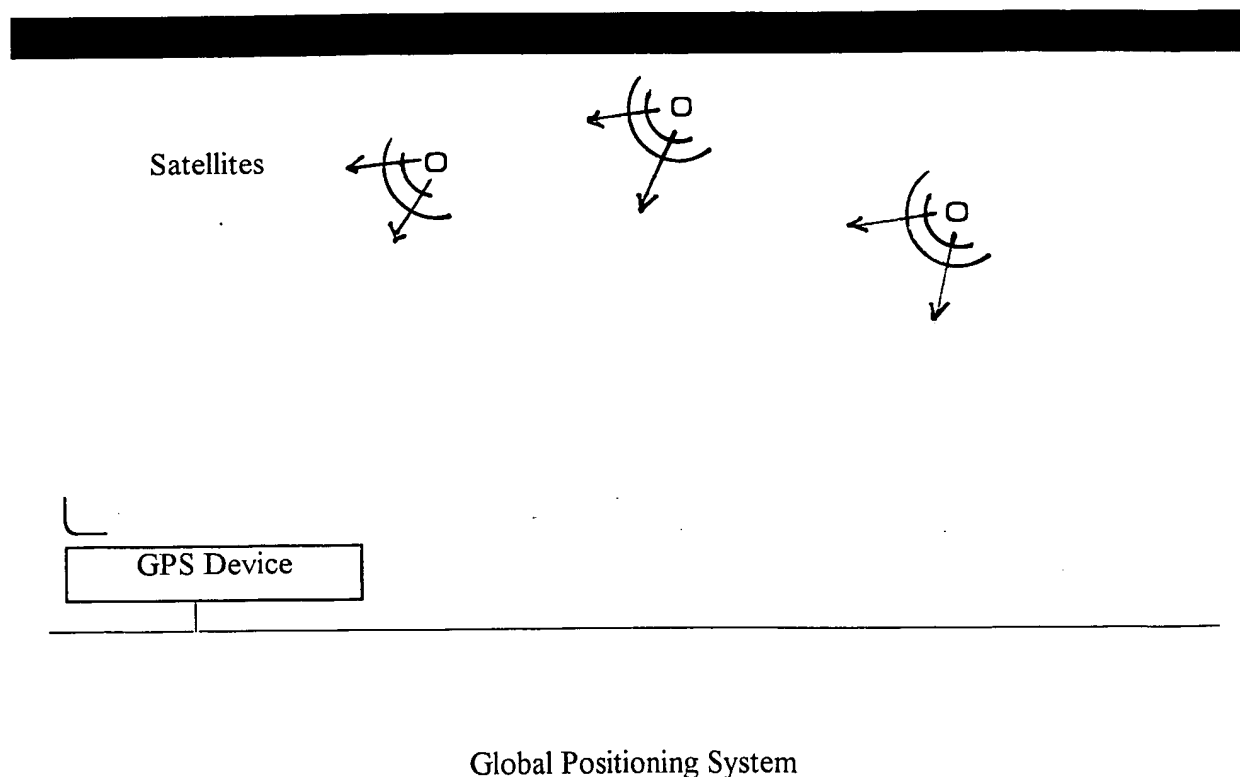
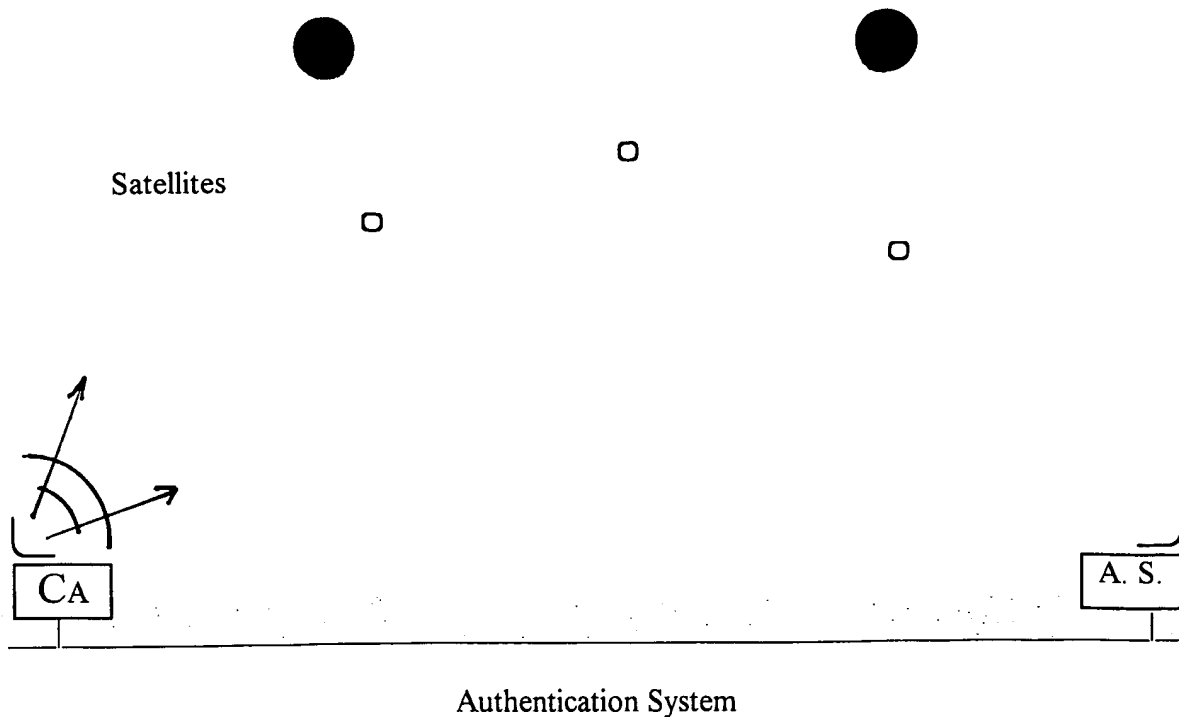


Figure 8A

The top diagram illustrates a ground station (Cs) receiving signals from three satellites. The ground station is labeled 'Cs' and is connected to a point 'Ps' on the ground. Three satellites are shown in the sky, each with a signal path (indicated by a wavy line) directed towards the ground station. The ground station is also connected to a point 'PA' and a point 'A. S.' (Antenna System) on the ground. The label 'Satellites' is at the top.

The bottom diagram illustrates a ground station (CA) receiving a signal from one satellite. The ground station is labeled 'CA' and is connected to a point 'PA' on the ground. A single satellite is shown in the sky, with a signal path (indicated by a wavy line) directed towards the ground station. Two other satellites are shown nearby. The ground station is also connected to a point 'Ps' and a point 'A. S.' (Antenna System) on the ground. The label 'Satellites' is at the top.

Figure 8b

Diagram illustrating a mechanical system with three degrees of freedom. A horizontal base is shown with two points, PA and Ps . A mass CA is located at PA , and a mass Cs is located at Ps . Three springs, labeled f^1 , f^2 , and f^3 , connect the mass CA to three other masses, E_1 , E_2 , and E_3 , respectively. The distances from CA to E_1 , E_2 , and E_3 are labeled DA_1 , DA_2 , and DA_3 . The distance between PA and Ps is labeled DAS .

Figure 9

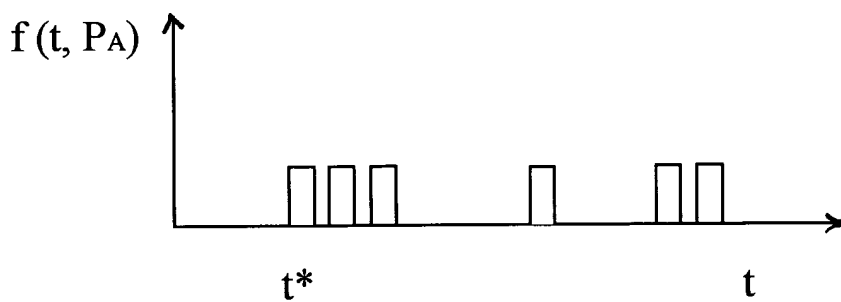


Figure 10

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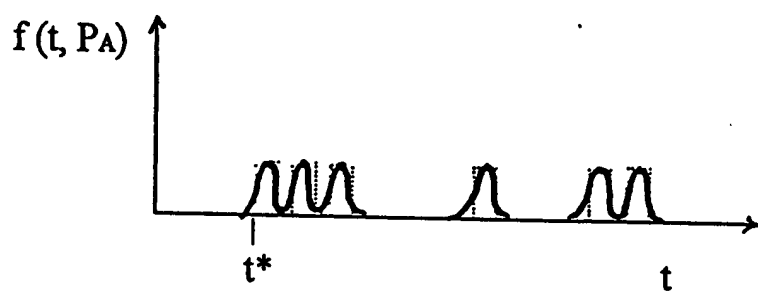
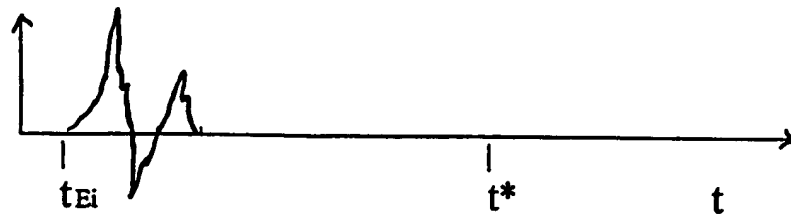


Figure 10 A

Figure 1 consists of four vertically stacked plots sharing a common horizontal time axis labeled t . The top three plots show functions $f^1(t, P_A)$, $f^2(t, P_A)$, and $f^3(t, P_A)$ respectively. These functions exhibit noisy, fluctuating behavior. The bottom plot shows the function $f(t, P_A)$, which displays distinct, periodic peaks. Two vertical dashed lines are drawn through all four plots, with the leftmost line labeled t^* on the horizontal axis.

• •

$f^i(t, P_i)$



$f^i(t, P_A)$

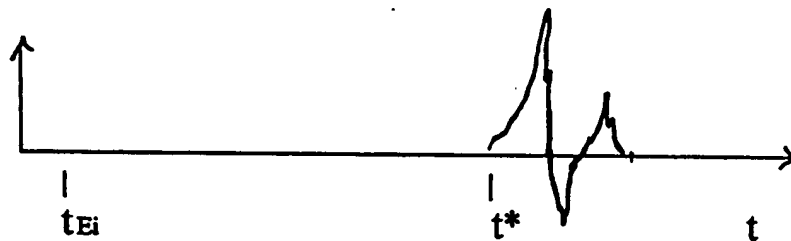


Figure 11A

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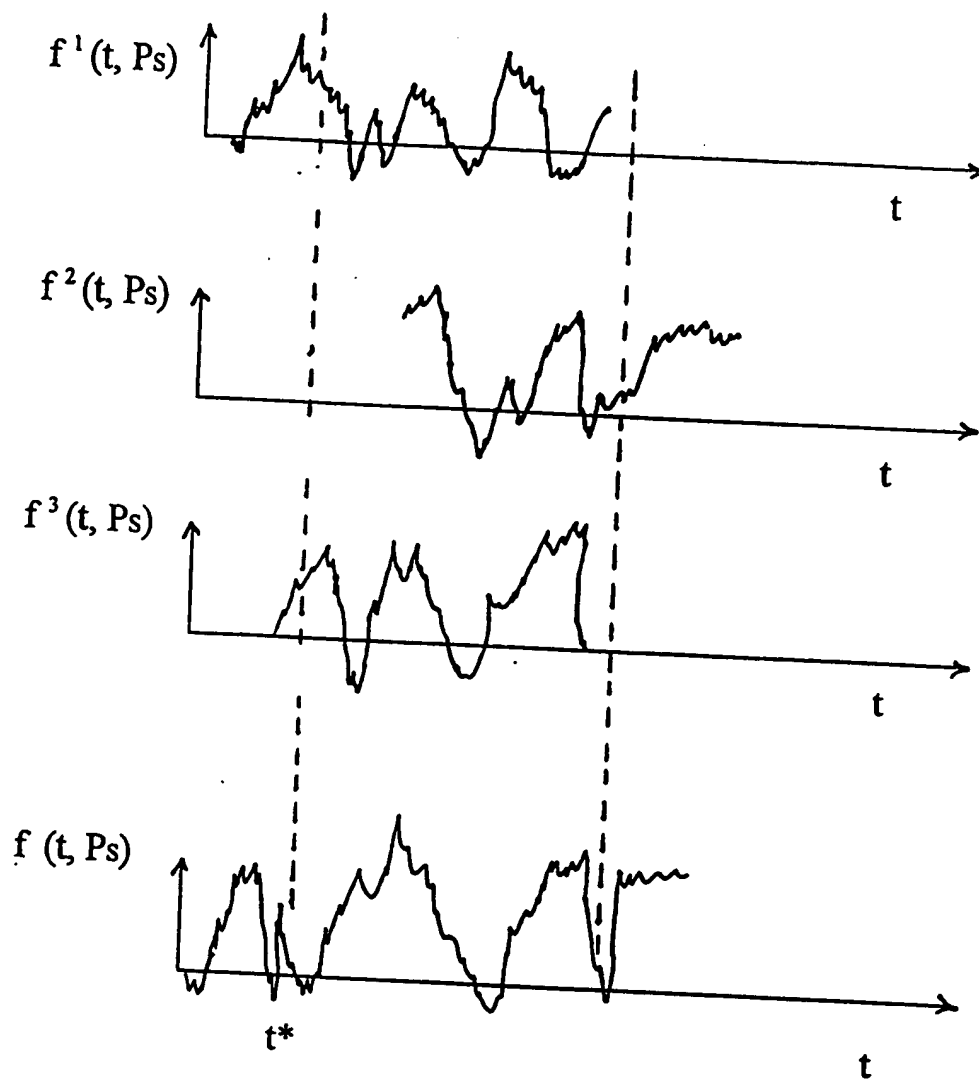


Figure 12

Diagram illustrating a cryptographic protocol involving three entities: CA 104, Cs 400, and Authentication Server 200. The diagram shows three encryption steps (E1, E2, E3) and three decryption steps (f1, f2, f3). Step 7 is indicated by a wavy arrow pointing to the first decryption step, and Step 6 is indicated by a wavy arrow pointing to the second decryption step. A dashed arrow at the bottom points right with the label (505).

Figure 13

Figure 1 consists of four vertically stacked plots, each showing a function of time t . The functions are labeled on the left as $f^1(t, P_A)$, $f^2(t, P_A)$, $f^3(t, P_A)$, and $f(t, P_A)$. The horizontal axis for all plots is time t . The first three plots show highly oscillatory, noisy signals. The fourth plot shows a smoother signal with distinct peaks. Two vertical dashed lines are drawn across all four plots. The left dashed line is labeled t^* at the bottom. The right dashed line is unlabeled.

Figure 14

